PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference WOP0299	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/GB2004/004303	International filing date *(day/month/year)* 11.10.2004	Priority date *(day/month/year)* 08.11.2003
International Patent Classification (IPC) or national classification and IPC B04C5/10, B04C5/13, A47L9/16		
Applicant DYSON TECHNOLOGY LIMITED et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 2 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☒	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☒	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
20.05.2005	27.01.2006
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Redelsperger, C Telephone No. +49 89 2399-6058

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/GB2004/004303

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1, 3-11	as originally filed
2	received on 24.03.2005 with letter of 24.03.2005

Claims, Numbers

8-18	as originally filed
1-7	received on 24.03.2005 with letter of 24.03.2005

Drawings, Sheets

1/4-4/4	as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/GB2004/004303

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 17

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☒ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. 17 are so unclear that no meaningful opinion could be formed *(specify)*:

see separate sheet

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form	☐	has not been furnished
	☐	does not comply with the standard
the computer readable form	☐	has not been furnished
	☐	does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See separate sheet for further details

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/GB2004/004303

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-16,18
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-16,18
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-16,18
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re: Item V

1. Claim 1

1.1. Closest Prior Art

Document FR-A-2 836 360 (SAMSUNG GWANGJU ELECTRONICS CO), called D1, is considered to represent the closest available prior art.

D1 describes also a separating apparatus having all the features of the preamble of claim 1 and is also concerned with the problem of " *the clogging of the trough-holes of the shroud".*

1.2. Difference

The subject-matter of claim 1 differs from that of D1, in that the lip of the shroud of the subject-matter of claim 1 comprises a plurality of apertures theretrough.

The technical effect of this differentiating feature is that the partially cleaned air passes though the apertures (136) and is filtered before exiting the separating chamber (132) via the through-holes (128) in the shroud (124) and therefore reduces the clogging of the said through-holes (128).

1.3. Objective problem

Reducing the clogging of the through-holes (43a) of the separating apparatus of D1.

Since none of the available prior art documents discloses such separating apparatus nor suggest to modify the lip of the apparatus of D1 as described in the characterising part of claim 1, the subject-matter of claim 1 can be considered both, as novel and inventive (Articles 33(1)-(3) PCT).

2. Claim 18

For similar reasons as those given for claim 1, the subject-matter of claim 18 can be considered both, as novel and inventive (Articles 33(1)-(3) PCT).

3. Industrial applicability

The industrial applicability is obvious (Art.33(1) and (4) PCT).

Re. Item III

Claim 17 contains references to the drawings. It is unclear which technical features, necessary for the invention, are claimed.
According to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here.
Claim 17 has therefore to be omitted.

Re. Item VII

To meet the requirements of Rule 5.1(a)(ii) PCT the document FR-A-2 836 360 (D1) should be identified in the description and its relevant contents should be indicated. The applicant should ensure that it is clear from the description which features of the subject-matter of independent claim 1 are known from D1

The features of the claims should be provided with reference signs placed in parentheses to increase their intelligibility (Rule 6.2(b) PCT).This applies to both the preamble and characterising portion.

used in that the risk of the shroud through-holes becoming clogged or blocked is reduced.

It is an object of the invention to provide a shroud for separating apparatus in which the risk of the through-holes of the shroud becoming blocked by dirt and dust is reduced in comparison to known prior art arrangements.

The invention provides separating apparatus comprising a separating chamber in which cyclonic separation is able to take place, an inlet to the separating chamber and a shroud comprising a wall having a multiplicity of through-holes forming an outlet from the separating chamber, the shroud further comprising a lip extending away from the wall the lip comprising a free distal end projecting into the separating chamber, characterized in that lip has a plurality of apertures therethrough.

The provision of apertures in the depending lip allows the airflow to be drawn through the apertures whilst it is still in the separating chamber. This has the effect of capturing some of the dirt and dust which remains entrained within the airflow so that it collects on the upstream side of the lip. Thus the shroud through-holes (which form the outlet from the separating chamber) are presented with less entrained dirt and dust and the risk of the through-holes becoming blocked is reduced.

Because the lip extends into the separating chamber, the airflow passing through the chamber is not forced to pass through the apertures of the lip. If the apertures become blocked by the collected matter, the airflow simply bypasses that area of the lip without any significant increase in pressure losses.

Preferably, the apertures are spaced from the through-holes by an imperforate portion of the wall and/or lip. More preferably, the breadth of the imperforate portion of the wall and/or lip is at least one tenth of the diameter of the wall of the shroud, even more preferably, substantially equal to one tenth of the diameter of the wall of the shroud.

CLAIMS

1. Separating apparatus comprising a separating chamber in which cyclonic separation is able to take place, an inlet to the separating chamber and a shroud comprising a wall having a multiplicity of through-holes forming an outlet from the separating chamber, the shroud further comprising a lip extending away from the wall, the lip comprising a free distal end projecting into the separating chamber, characterized in that lip has a plurality of apertures therethrough.

2. Separating apparatus as claimed in claim 1, wherein the separating chamber has a longitudinal axis and the lip extends substantially parallel to the longitudinal axis.

3. Separating apparatus as claimed in claim 1 or 2, wherein the wall and the lip are generally cylindrical.

4. Separating apparatus as claimed in any one of the preceding claims, wherein the apertures are spaced from the through-holes by an imperforate portion of the wall and/or lip.

5. Separating apparatus as claimed in claims 3 and 4, wherein the breadth of the imperforate portion of the wall and/or lip is at least one tenth of the diameter of the wall.

6. Separating apparatus as claimed in claim 5, wherein the breadth of the imperforate portion of the wall and/or lip is substantially equal to one tenth of the diameter of the wall.

7. Separating apparatus as claimed in any one of the preceding claims, wherein the combined area of the apertures at the upstream end thereof is no less than the area of the inlet to the separating chamber.